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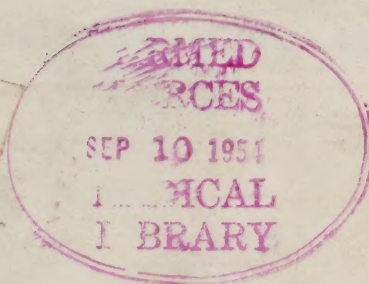
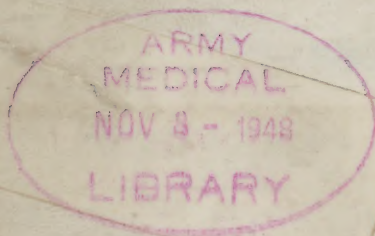
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by authority of
The Joint Chiefs of Staff,
of Col. S. S. Grubbs

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MENT SECTION)

AVIATION MEDICINE, GENERAL MEDICINE, VETERINARY MEDICINE, CHEMICAL WARFARE



COMBINED INTELLIGENCE OBJECTIVES
SUB - COMMITTEE

1945

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**AVIATION MEDICINE, GENERAL MEDICINE, VETERINARY MEDICINE,
CHEMICAL WARFARE**

UNIVERSITY OF GOTTINGEN

18 April 1945 to 27 April 1945

**CIOS Target Nos. 24/17• & 25/82
Medicine
Aircraft**

**COMBINED INTELLIGENCE OBJECTIVES SUB-COMMITTEE
G-2 Division, SHAEF (Rear) APO 413**

S-E-C-R-E-T

TABLE OF CONTENTS

PART I

AVIATION MEDICINE

1. The Target
2. Personnel Interrogated
3. Information obtained by Interrogation
4. Equipment
5. Documents and Records
6. General Impressions.

PART II

GENERAL MEDICINE

1. The Target
2. Personnel Interrogated and Information
obtained
3. Equipment
4. Optical and Instrument Works Inspected

PART III

VETERINARY MEDICINE

1. Introduction
2. Animal Diseases
3. The Slaughter House
4. Milk
5. Agriculture
6. Apparatus Acquired
7. Recommendations

PART IV

CHEMICAL WARFARE

S-E-C-R-E-T

PART V

INSTRUMENTS EVACUATED FROM TARGET
AREA

PART VI

DOCUMENTS AND RECORDS EVACUATED
FROM TARGET AREA

ADDENDUM

PERSONNEL OF INSPECTION TEAM

| | |
|---|--------------------|
| Commander A.J. Vorwald (MC) USNR | Team Leader |
| W/Commander R.H. Winfield, RAF. | Deputy Team Leader |
| Colonel Francois Reynolds, U.S. Army | |
| Colonel Herbert Wright (MC) USTAAF | |
| Commander Fitz Weddell (MC) USN | |
| Major S. Curwen, RAMC. | |
| Major Francois Chinard (MC) USTAAF | |
| Captain Carlo Henze (MC) Office of the Chief Surgeon ETOUSA | |
| Captain J. Harley Mason, RAMC | |
| Captain Anthony Domonkes (MC) USTAAF | |
| Surgeon Lieut. J.E. Gabb, RNVR | |

S-E-C-R-E-T

PART I

AVIATION MEDICINE

1. The Target

The target located in Gottingen, Germany, consisted primarily of the Physiology Institute attached to the Medical School of the University. This Institute had been actively engaged in Aviation Medical Research under the direction of Professor Hermann Rein.

In addition, Dr. Hubertus Strughold, Director of the Aviation Medical Research Institute, Air Ministry, Berlin, and some of his colleagues now prisoners of war at the Institute were available for interrogation.

Furthermore, Gottingen contained a large Aerodynamics Institute and a number of optical works. These were only of secondary interest as targets for investigation by the medical team.

The air field, a few miles outside of Gottingen, was largely destroyed. Nevertheless, this too was briefly investigated in the interest of Aviation Medicine.

2. Personnel Interrogated.

A. Dr. Hubertus Strughold, a Colonel in the Luftwaffe and Director of the Aviation Medical Research Institute, Berlin: Strughold was the mainspring of German Aviation Medical Research. He did Post Graduate work in America during 1929, 1930 and 1931. Most of his time was spent at the University of Chicago, Northwestern University and Western Reserve.

B. Professor Hermann Rein, Director of the Physiology Institute of the University of Gottingen.

C. Frauline, Dr. Ingerbor Schmidt, a colleague of Strughold and reputed to be an authority on vision.

D. Dr. Rosé, a Lieutenant Colonel in the Luftwaffe, a colleague of Strughold and interested primarily in vision.

E. Dr. Jurgen Aschoff, the son of the well known pathologist Ludwig Aschoff. He worked at the Institute and his interest related to acclimatization, temperature control and physiological reactions of the body to variations in ambient temperature and humidity.

3. Information Obtained by Interrogation.

A. In general, interrogation revealed very little information not already known by the Allies. Even though the interrogated ~~ask~~ apparently cooperated to the fullest, it soon became evident that German research had failed to solve many of the current medical problems pertaining to aviation. Although numerous observations were divulged with enthusiasm nevertheless most of them had long since been made and applied by the Allies.

It appears therefore that German investigators suffered tremendously from their isolation. Knowledge and developments apropos aviation medicine were not coming to them from outside their sphere of domination.

B. Colonel Strughold revealed that his work at the Aviation Medical Research Institute in Berlin was largely academic. This is somewhat contrary, however, to impressions gained by reading his various monographs and many articles published in the German Journal "Luftfahrt Medizin". He disclosed, also that he visited various activities of the Luftwaffe to give lectures relative to oxygen and oxygen indoctrination.

Of significant value to the Allies is the fact that a Japanese scientist worked in Strughold's laboratory for two years. He was identified as a Dr. Murai and was reported as having gone down in a Jap U-Boat sunk somewhere in the Pacific on its return to Japan. Nevertheless it was surmized that he had transmitted much information to Japan apropos German Aviation Medicine. Not only was this information relevant to activities in the Central Medical Laboratory, but probably concerned also other medical research centers throughout the Reich.

Strughold was considerably disturbed about the welfare of his staff who, unable to evacuate Berlin, were now threatened by the Russians. In this respect, he frequently

mentioned his colleague Dr. Ulrich Luft. Latest information placed Luft at 74 Kaiserallee, Berlin, Wilmersdorf or at the Kaiser Wilhelm's Institute, Berlinerbuch. A number of other experts were also mentioned including Professor Jungbluet at Utrecht, the man who first described air embolism; Dr. Hanson at Halle, an expert on nutrition at high altitude; Professor Knothe at Jutebog, and expert on clothing and chief of Air Evacuation for the Luftwaffe.

In addition, Strughold repeatedly expressed great concern about the whereabouts of his records and scientific equipment. Although much of it had been shipped out of Berlin it had never arrived in Gottingen. Latest underground information coming to Strughold places the equipment in a barracks and two freight cases in Tepel, a small village near Marienbad and in a freight car in the town of Neustadt on the Orlar river near Erfordt. His records were reported to be in the private library of a convent in Tepel also in a library in Frankfurt on the Oder.

Considerable time was spent viewing a number of rolls of movie film which Strughold had prepared in Berlin. He prized these very highly and made a great effort to bring them personally to Gottingen. The films were exceptionally good. They depicted nothing new or striking however. The agencies of Britain and America have long since produced similar preparations. The films have been included in the pouch forwarded to the Secretariat, C.I.O.S. Copies should be prepared and distributed to the interested agencies of the Royal Navy, the Royal Air Force, the U.S. Navy and the U.S. Army. The films having priority for copy and distribution may be listed as follows:

- (1) "Unterbrechung der Sauerstoffmung in Verschiedenen Hohen". 1 roll.
- (2) "Elektroencephalographie" 2 rolls.
- (3) "Beschleunigungsfilm". 1 roll.
- (4) "Darstellung der Hohenwirkung". 2 rolls.

A list of German Institutes engaged in Aviation Medicine Research was also obtained from Strughold. The list is as follows:

- (1) Luftfahrtmedizinisches Forschungsinstitut des RLM.
Berlin NW40 Scharnhorststrasse 35 (H. Strughold).
- (2) Institut für Flugmedizin, Berlin Adlershof (Dr. Ruff).
- (3) Erprobungsstelle der Luftwaffe, Rechlin / Stuttgart
(Dr. Benzingen)
- (4) Pathologisches Institut Freiburg / Breisgau (Prof.
Büchner)
- (5) Physiologisches Institut Göttingen (Prof. Rein)
- (6) Sanitäts-Versuchs-und Lehrgruppe der Luftwaffe, Jüterbog,
Altes Lager (Prof. Knothe).
- (7) Institut für Luftfahrtmedizin München (Prof. Weltz).
- (8) .Inst. für Luftfahrtmedizin Hamburg Eppendorf (Dr. Schwarz)
- (9) Kaiser-Wilhelm-Institut für Arbeitsphysiologie, Dortmund
(Prof. Lehmann).
- (10) Physiolog. Institut Köln (Prof. Schneider).
- (11) Fleigerunterschuchungstelle der Med. Klinik Freiburg /
Br. (Dr. Frey).
- (12) Physiolog. Institut Breslau, Fliegerunterschuchungstelle,
(Dr. Kreienberg).
- (13) Aussenstelle für Hirnforschung des Luftfahrtmed.
Forschungsinstituts im Kaiser-Wilhelm-Inst. für Hirn-
forschung Berlin-Buch (Prof. Spatz z. Zeit München).
- (14) Aussenstelle des Luftfahrtmedizin. Forschungsinstitute
Brannenburg am Inn (Dr. Desaga).
- (15) Aussenstelle des Luftfahrtmed. Forschungstinst. Berlin,
Physiolog. Instit Heidelberg (Dr. Gauer).
- (16) Physiologisches Institut Prag (Prof. Schubert).
- (17) Physiologisches Institut Leipzig und Gebirgssanitätsschule
St. Johann in Tyrol (Prof. Kurt Kramer).

- (18) Kerckhoff Institut Bad Neuheim (Prof. Schaefer)
- (19) Physiolog Institut Giessen (Prof. Eb. Koch).
- (20) Kaiser-Wilhelm-Institut für Biochemie Berlin Dahlem (Dr. Unstruth).
- (21) Physiologisches Institut Danzig (Prof. Thauer Z. Zeit Bad Neuheim Kerckhoff Institut.

In addition two recent publications were acquired from Strughold, namely "Grundriss der Luftfahrtmedizin", Zweite Auflage, October 1944, and "Physiologie des Hohenfluges" (99 questions and answers.) These have been forwarded in the pouch to the Secretariat, C.I.O.S.

Strughold also gave the following information:

- (1) There is only one human centrifuge in Germany which is at the Research Institute in Berlin, 35 Scharnhorststrasse. The Institute was bombed, but the centrifuge itself was not damaged. There is a new low pressure cold chamber, 95 feet long, three quarters finished, at Templehof, as well as an unfinished human centrifuge.
- (2) Many experiments have been carried out in Germany on explosive decompression which demonstrated similar findings as those in the U.S. It was reported that there is a 17 second "time reserve" for all persons irrespective of their physical condition. This pertained to persons at altitudes of between 13,000 and 16,000 meters.
- (3) There was considerable discussion concerning the "paradoxical effect of oxygen". Often semi-consciousness due to anoxia (usually demonstrated by breathing 7% oxygen) when pure oxygen or air is suddenly breathed by the patient, between 2 and 3% of those persons will go into a catatonic state. They have convulsions, athetoid movements and are entirely irresponsible for from 3 to 5 minutes.

German pilots are given indoctrination by being rendered anoxic and an effort is made to find out whether or not the "paradoxical effect" occurs in them. If it does, the pilot is disqualified. With relation to the U.S. Air Force pilots, inasmuch as we have only one anoxia incident per 1000 man missions and only 3% of persons so effected develop the paradoxical effect, it does not seem a very important item

- (4) The physical examination given German pilots is practically the same as that used by the U.S. Air Force. The examination is not repeated periodically but only when indicated.
- (5) Encephalography is used extensively in Germany for studying altitude sickness, locating brain tumors, etc.

C. Interrogation of Professor Hermann Rein disclosed little or nothing of value to Aviation Medicine not already known to the Allies.

Since the Institute functioned as a subsidiary to the Central Research Establishment for Aviation Medicine in Berlin, it was the recipient of numerous secret documents. These were acquired and forwarded in the pouch to the Secretariat, C.I.O.S.

Rein disclosed his observations that the liver produces a hormone not unlike digitalis which influences cardiac efficiency. It was claimed that in animals whose livers have been removed, heart efficiency decreased unless this hormone was furnished or strophanthus injected. It was postulated that the high altitude effect of anoxia on the heart arose from lack of this liver-produced hormone.

In addition, Rein revealed his interest in infectious hepatitis. He claimed that the electrocardiogram revealed characteristic changes two to three weeks before the onset of Jaundice, thus making it possible to diagnose infectious hepatitis in its early stages. The change in the electrocardiograph was said to be not unlike those occurring in

anoxia. First, an increase in the size of the T-wave and then an inversion of that wave occurred. Although the specific cause of infectious hepatitis was unknown, Rein believed it resulted from a deficient diet, especially one poor in fat. This was referred to as responsible for the high incidence of hepatitis now prevalent in Germany.

Efforts were being made to uncover a source of fat and protein to fortify the deficient diet. Rein told of his current development, namely the extraction of protein and fat from the pollen of flowers from pine trees. The pollen is blown off the trees by huge wind propellers and collected from the air by suspended electrodes (electric precipitators). It was said that 1 hectare of pine wood of middle age delivered approximately 35 kilograms of protein and 35 to 40 kilograms of fat.

Some impression of the activities of the institute might be gained by perusal of the following list of publications by various attached investigators. Reprints of many of these are included in the pouch forwarded to the Secretariat, C.I.O.S.

Kreislauf-Regulation

Kommt Milchsäure als physiologisches Regulans im peripheren Kreislauf in Frage?

von Giovanni Domini und Hermann Rein.
(Pflugers Arch. 246, 608, 1943.)

Ueber die Wirkung der Kohlensäure auf entnervte Gefassgebiete.
von Hermann Mercker.
(Pflugers Arch. 246, 577, 1943).

Vasomotorische Schutzreflexe aus dem Stromgebiet der Arteria hepatica.
von Hermann Rein.
(Pflugers Arch. 246, 866, 1943.)

Zur physiologischen Bedeutung des vasomotorischen Hepaticareflexes.
von Hermann Rein.
(Pflugers Arch. 246, 880, 1943.)

Zur Frage der Herzinsuffizienz im Sauerstoffmangel.
von Hermann Mercker.
(Luftfahrtmedizin, Bd. 8, 2/3. Heft, 217, 1943).

Ueber die Interferenz der lokal dilatatorischen Wirkung des
Acetylcholins mit zentralnervöser Vasokonstriktion im peri-
pheren Gefäßnetz.
von Hermann Mercker.
(Pflügers Arch. 247, 336, 1943.)

Die Anpassung von Durchblutung und Energieumsatz des rhythmisch
arbeitenden Skelettmuskels bei Belastungsänderungen.
von F. Grosse-Brockhoff, H. Rein u. W. Schoedel).
(Pflügers Arch. 248, 62, 1944.

Versuche über das sensible Trigeminusgebiet als Ausgangsstelle
von Kreislaufreflexen.
von Heinz Weber.
(Pflügers Arch. 248, 143, 1944)

Die bestimmenden Faktoren für die Vasomotorik der Ruhedurch-
blutung des Skelettmuskels.
von Hermann Rein.
(Pflügers Arch. 248, 100, 1944.

Das Zusammenwirken von Acetylcholin, Mangelstoffwechselprodukten
und vegetativer Innervation als Grundlage der natürlichen Vaso-
motorik des Skelettmuskels.
von Hermann Rein.
(Pflügers Arch. 248, 111, 1944).

Die Entstehung der Arbeitsmehrdurchblutung in Abhängigkeit
von der Reizfrequenz bei indirekter Reizung.
von F. Grosse-Brockhoff u. H. Mercker.
(Pflügers Arch. 248, 454, 1944.

Die Wirkung von KCL auf den isotonisch arbeitenden Skelettmuskel
in Abhängigkeit von der Reizintensität und der Reizfrequenz
im kurz dauernden Tetanus bei indirekter Reizung.
von F. Grosse-Brockhoff u. H. Mercker.
(Pflügers Arch. 248, 464, 1944).

Wärme-Regulation.

Physiologische Grundlagen zum Verständnis von Wärme - und
Kälteschäden am menschlichen Organismus.
von Hermann Rein.
(Arch.f.Dermatologie u. Syphilis, 184, 23, 1943).

Ueber die Aenderungen der Errebarkeit von Atem-und Kreislaufzentrum bei rascher Unterkühlung.
von F. Grosse-Brockhoff u.W.Schoedel.
(Pflugers Arch. 246, 664, 1943.)

Tierexperimentelle Untersuchungen zur Frage der Therapie bei Unterkühlung.
von F. Grosse-Brockhoff u.W. Schoedel.
(Arch.f.exp.Pathologie u.Pharmakol. 201, 457, 1943.)

Zur Wirkung der Analeptika auf unterkühlte Tiere.
von F. Grosse-Brockhoff u.W.Schoedel.
(Arch.f.exp.Pathologie u.Pharmakol. 202, 443, 1942).

Das Bild der akuten Unterkühlung im Tierexperiment.
von F. Grosse-Brockhoff u.W.Schoedel.
(Arch.f.exp.Pathologie u.Pharmakol. 201, 417, 1943).

Die direkten Wirkungen der Temperatur auf den Artierien-Durchmesser.
von J. Aschoff.
(Pflugers Arch. 247, 132, 1943.)

Zur Frage der Kreislauf- und Atmungsregulation bei exogener Hyperthermie.
von F. Grosse-Brockhoff, H. Mercker u.W.Schoedel.
(Pflugers Arch. 247, 342, 1943.)

Grundversuche zur Temperatur-Regulation. Ueber vergleichende Messwerte zur Beurteilung der Wärme-Abgabe an Wasser.
von J. Aschoff.
(Pflugers Arch. 247, 469, 1943)

Grundversuche zur Temperatur-Regulation. Vergleich unterschiedlicher Wärme-Durchgangsbedingungen am Modellkörper u.an. der Hand.
von J. Aschoff.
(Pflugers Arch. 247, 480, 1944.)

Der Anstieg der Rectal-Temperatur bei umschriebener Abkühlung der Körper-Oberfläche.
von J. Aschoff.
(Pflugers Arch. 248, 149, 1944.)

Die Vasodilatation einer Extremität bei örtlicher Kälteeinwirkung.

von J. Aschoff.

(Pflügers Arch. 248, 149, 1944.)

Ueber die Kälte-dilatation der Extremität des Menschen in Eiswasser.

von J. Aschoff.

(Pflügers Arch. 248, 183, 1944.)

Mitteilung zur spontanen und reflektorischen Vasomotorik der Haut.

von J. Aschoff.

(Pflügers Arch. 248, 171, 1944.)

Ueber die Interferenz temperaturregulatorischer und kreislaufregulatorischer Vorgänge in den Extremitäten des Menschen.

von J. Aschoff.

(Pflügers Arch. 248, 197, 1944.)

Kreislaufregulatorische Wirkungen der Kälte-dilatation einer Extremität als Folge externer, umschriebener Abkühlungen.

von J. Aschoff.

(Pflügers Arch. 248, 436, 1944.)

Atmung und Sauerstoffmangel

Ueber Sauerstoff-Verbrauch und Wärmehaushalt im Sauerstoffmangel.

von K.Th.Jouck.

(Luftfahrtmedizin Bd.9, 1/2.Heft, 26, 1944.)

Ueber Umsatzänderungen bei experimenteller Acidose.

von W. Döring.

(Pflügers Arch. 248, 208, 1944.)

Ueber Störungen der Wärmeregulation im akuten O₂-Mangel bei Kältebelastung.

von O. Hülshagen.

(Luftfahrtmedizin Bd. 9, 1/2. Heft, 16, 1944.)

Ueber Atmungserregbarkeit im der Schwangerschaft.

von H.H. Loeschke, u.K.H. Sommer.

(Pflügers Arch. 248, 405, 1944.)

Höhenphysiologie

Höhenanpassung am Jungfraujoch. I. Mitteilung. Untersuchung der Atmung und des Blutes unter Ruhebedingungen.
von H. Becker-Freyseng, H.H. Loeschcke, U. Luft. u.E. Opitz.
(Luftfahrtmedizin, Bd. 7, 2/3. Heft, 160, 1942.)

Höhenanpassung am Jungfraujoch. II. Mitteilung: Atemvolumen und Kohlensäuresystem bei akuten Sauerstoffmangel vor, während und nach Höhenanpassung.
von H. Becker-Freyseng, H.H. Loeschcke, U. Luft, u.E. Opitz.
(Luftfahrtmedizin, Bd. 7, 2/3. Heft, 180, 1942.)

Höhenanpassung am Jungfraujoch. III. Mitteilung: Steigerung der Höhenfestigkeit während der Höhenanpassung und nach Rückkehr in die Ebene.
von U. Luft u.E. Opitz.
(Luftfahrtmedizin, Bd. 7, 2/3. Heft, 205, 1942.)

Höhenanpassung am Jungfraujoch. IV. Mitteilung: Umstellung und Anpassung der Atmung in 3500 m Höhe u. die Wirkung von NH_4Cl .
von H.H. Loeschcke, U. Luft u.E. Opitz.
(Luftfahrtmedizin, Bd. 7, 2/3. Heft, 218, 1942.)

Höhenanpassung am Jungfraujoch. V. Mitteilung: Die Beteiligung der Niere am Säure-Basen-Haushalt beim Höhengedächtnis und bei akuter Hypoxie.
von H.H. Loeschcke, U. Luft, u.E. Opitz.
(Luftfahrtmedizin Bd. 8., 2/3. Heft, 265, 1943.)

Ueber Blutzucker und Zuckerbedarf im Unterdruck.
von F.W. Rittinghaus.
(Luftfahrtmedizin Bd. 9, 1/2. Heft, 95, 1944.)

Methodik

Magnetische O_2 -Analyse in Gasgemischen.
von H. Rein.
(Dtsch. Akademie der Luftfahrtforschg. Bd. 7, 1943, Heft 2.)

Über die Durchblutungsmessung an Organen in situ, insbesondere mit der Thermostromuhr.

von H. Rein.

(Ergebnisse der Physiologie, 45, 1944.)

Photoelektrisch registrierende Schraubdressel zur quantitativen Gefässdrosselung.

von K.E. Loose.

(Pflugers Arch. 248, 71, 1944.)

D. Interrogation of Frauline Dr. Ingerbor Schmidt revealed nothing of significance. She demonstrated various vision testing instruments evacuated from Berlin.

These instruments included one designed for scoring color perception. Dr. Sscmidt studied 20,000 persons and concluded that 7% of men and 4% of women are color blind to some degree. The instrument was developed within a period of six days at the command of Marshal Goering who was dissatisfied with the ordinary color charts. It incorporates a series of small colored lights so varied in intensity as to make it easy to determine the degree of color blindness presnet. The instrument is described in the Journal "Deutsche Militararzt" for 1942. The instrument has been forwarded to the Secretariat C.I.O.S. in the interest of Major Francois Chinard of the U.S. 8th Air Force, Pinetree, England.

The other instrument was designed for measuring visual capacity in dim light immediately after full light adaptation. Description of this instrument, a modification by W. Comberg of the globe-adaptometer of Hertel can be found in Schiek and Brückner's Kurzes Handbuch der Ophthalmologie 1932, pages 287-289. This instrument was not removed since identical ones have already come into the hands of the Allies.

The phorometer by Carl Zeiss was also demonstrated. This too was not removed since a similar one is already being evaluated at the R.N. Physiology Laboratory, Gosport.

E. Interrogation of Dr. Rosé revealed the following:

The Germans have not increased night vision acuity by the use of various chemical agents. Neither

lipoid extract from the retina, caffeine, strichnine, nor nitrate worked. Many of these agents were tried at altitude. Stimulation of other senses, exercising skeletal muscles, failed to improve acuity as claimed by the Russians. Super sonic waves, 24000 x per sec, likewise failed. General muscle exercise did not improve ~~da~~ adaptation as claimed by the Russians.

Rose denied all knowledge of the existence of a drug such as Lagtal B for improving night vision. He claimed, however, that good living, exercise and adequate sleep and training were of value.

With reference to optical correction of vision, the Germans had tried contact lenses, but they were most uncomfortable and became intolerable after being worn two hours. They had perfected goggles with corrective lenses with one piece of curved glass. Samples of these were not available.

The eyes of each pilot were tested routinely for visual acuity, fusion, color sense, depth perception, motility, and subjected also to a general ophthalmological examination. The German standard for visual acuity for pilots was formerly 15/20 without glasses and 15/15 in one eye and 15/21 in the other eye without corrective lenses. More recently the standards have been raised due to the excess of pilots.

F. Interrogation of Dr. Aschoff revealed nothing not already detailed in his publications. Reprints of these are included in the pouch forwarded to the Secretariat, C.I.O.S.

4. Equipment

A. The scientific equipment in the Physiology Institute was generally first class. Except for a decompression chamber, nothing was found unlike that in any modern physiology laboratory of a medical school.

B. The Low Pressure Chamber, Gottingen University:

The German low pressure chamber was cooled by using

CO₂ ice in ethylene glycol. The temperature in the chamber could be reduced to minus 65°C in 45 minutes. The walls of the chamber were insulated by Iparkau which was very efficient.

A brief prepared by Prof. Rein relative to the low pressure chamber is reproduced as follows:

U-Kammer im Physiologischen Institut
Göttingen

Die Tiefkühlanlage

In zwei Tanks zu je 1000 Liter Inhalt sind je 500 Liter Aethyl-Glykol untergebracht. Durch Zugabe von "Trocken-Eis" (CO₂) erfolgt eine Abkühlung der Flüssigkeit auf ca - 75° C. In der Flüssigkeit liegt in jedem Tank eine Kupferrohr-Schlange, welche unter Zwischenschaltung von 2 Umwälzpumpen mit den Radiatoren der Kammer verbunden ist Als Uebertrager-Flüssigkeit in der abgeschlossenen Rohrleitung und den Radiatoren dient Aethylglykol. Das in de Tanks freiwerdende gasförmige CO₂ wird durch einen Exhaustor abgesaugt. Innerhalb der Tanks liegt eine zweite Rohrschlange, durch welche die Ventilations-luft der Kammer zur Trocknung ausgefroren wird. Für 24 Stunden werden bei Aufnahme von 2 Mann in der Kammer ca 1000 kg feste CO₂ verbraucht.

Ausser dieser Tiefkühl-Anlage ist noch eine doppelte gewöhnliche Chloraethylanlage vorhanden, mit welcher die Kammer je nach Besetzung auf Null bis - 10°C abgekühlt werden kann.

Als Kälte-Isoliermaterial war zunächst Glaswolle benutzt worden, die sich aber als zu hygroskopisch erwiesen hat. Sie wurde durch eine neues synthetisches Kunstharzpräparat der IG Farben ersetzt - In Neuen Kammern hat man mit Vorteil die Kalteisolierung auf die Aussenseite der Kammer aufgelegt.

Die Pumpenanlage der U-Kammer.

Zur Evakuierung der Kammer wird eine grosse Schieber-Kolbenpumpe benutzt (5PS). Zur Ventilation und Konstanthaltung der Höhe eine Rotationspumpe von 3 PS, für die Auffahrt der Schleuse eine kleine Rotationspumpe von 1, 1 PS. Samtliche Pumpen Wassergekühlt.

Kie ursprünglich eingebauten Sicherheitsmassnahmen (Automatik für bestimmte Höhen usw.) wurden ausgebaut, da die Kammer ausschliesslich für Experimentierzwecke mit erfahrenom wissenschaftlichen Personal in und ausser der Kammer benützt wird.

5. Documents and Records.

A. Documents and Records acquired at the Institute were obtained from Professor Rein. They were forwarded via official pouch to the Secretariat, C.I.O.S.

B. Many of the documents enclosed in the pouch are classified. They were kept under lock and key and were presented only after considerable questioning about their presence.

Those with a high priority for translation and distribution in the interest of Aviation Medicine may be listed as follows:

"Drucksturzapoplexie"

"Druckflurz von 3 Auf 8 bis 15 km Luftdruckhöhe
Wirkung auf den Menschen"

"Kreislauf und Atmung beim Detonationen"

"Die Herstellung von Sauerstoff-Stickstoff-Gemischen"

"Sitzanlage mit Sauerungseinrichtung für hohe
Flugbeschleunigungen"

"Untersuchung der Beschleunigungswirkungen"

"Messung des Wärmedurchganges von Textilien,
insbesondere bei Nässe und Druck"

"Untersuchungen über die Gesetzmässigkeiten des Sehens
und der Sichtweite"

"Ertragsgrenzgränze für wechselnde Raumtemperatur
und Feuchte"

"Ertragsgrenzgränze für wechselnde Raumtemperatur
und Feuchte bei Ruhe und Arbeit"

"Nachtsehen und Raumsehen"

"Die Luftstossverletzung des Menschen unter besonderer Berücksichtigung der Schitzmoglichkeit"

"Arztliche Luftschuttsfragen"

"Schutz des Menschen gegen Brandhitze"

"Druckfturz auf Nenohen bis 17000 m. Wirkung auf den Menschen"

"Physiologie des Hohenfluges"
(99 questions and answers)

"Grundrifs der LUFTFAHRTMEDIZIN" von S. Ruff und H. Strughold. ZweiteAuflage.

6. General Impressions

A. An assessment of the evidence gained by interrogation of the P.O.W. Personnel and of the equipment at the Target leads us to conclude that the achievements of German Aviation medicine are in no case in advance of the Allies and in some instances definitely inferior to it.

B. It is also concluded that the German investigators suffered considerably from their isolation during the war years, since scientific achievements which they presented as new and revolutionary were in most cases long since attained by the Allied Investigators.

PART II

GENERAL MEDICINE

1. The Target. Institute of Hygiene, University of Gottingen, Germany. Directors: Professor Dr. Franz Schutz, Col. (MC) - POW Status.

The Institute is a moderately well equipped, 5-story brick and stone structure, the top floor of which is used as living quarters for approximately 12 of the staff attached to the German Army and now in a POW status. The basement contains the usual storerooms in which were seen only a minimum quantity of stock. One section of the basement

was set up for the practical demonstration of a small modern delousing unit (small dressing rooms, showers and sterilizer). A moderately large animal house contains a few sheep, guinea pigs, rabbits and mice and is located nearby.

2. Personnel Interrogated

A. Interrogation of the director, Dr. Schutz.

- (1) Infectious and Contagious Diseases, 1944, in Military area of Wehrkreis 11 (Hanover - Gottingen - Brunscheveig area), approximately 4,000,000 population (20% military).

| <u>Diseases</u> | <u>Number of Cases</u> | <u>Deaths</u> |
|---|------------------------|---------------|
| Dysentery, amebic | None | None |
| Hepatitis, acute infectious (not Weil's Dis.) | Very few | None |
| Diphtheria | 24,734 | 1,056 |
| Scarlet Fever | 19,880 | 189 |
| Small Pox | None | None |
| Tuberculosis (pulmonary) | 7,397 | 3,010 |
| Typhoid fever | 1,064 | 92 |
| Typhus fever | 890 | 102 |

- (2) Diphtheria is on the increase at the present time. Immunization of children is not obligatory, but it is estimated that 90% have been immunized.
- (3) By the law of 1870, all children are vaccinated against small pox at the end of their first year and again after the age of 12.
- (4) Using the usual typhus vaccine, only those exposed to typhus and all Military personnel over the age of 40 are immunized (3 injections) initially followed by 2 injections at yearly intervals.
- (5) Tetanus is rare. Only paratroopers receive routine toxoid immunization. All others are dependent upon TAT prophylaxis after injury.

B. Interrogation of Professor Dr. Schoen, Col. (MC)
Director of The Medical Clinic and Polyclinic,
(POW). 20 April 1945.

- (1) Tertian Malaria - Very few cases, despite the presence of Anopheles Mosquitoes and those cases are all imported. No better quinine substitute other than atabrine has been developed. Usual schedule of treatment is: Atabrine .1 Gram t.i.d. for 7 days, followed by Plasmochin 0.01 Gram t.i.d. for 3 days.
- (2) No new or specific treatment of typhus fever.
- (3) Rheumatic fever treatment: 4-8 Grams of Salicylates daily which he believes have only symptomatic effect. His views on etiology coincide with those current.
- (4) No new blood substitutes. The Army uses dried serum and plasma. Transportation of whole blood was found to be very difficult and was practised but little.
- (5) Has had no experience in the use of penicillin, as the drug has not become available.
- (6) The best sulfonamide drug in Germany is BADIONAL developed and produced by I.G. Farben in 1944. Skin and kidney reactions are very rare and its preparations may be given orally or parenterally. Nothing new has been discovered re the clinical use of sulfonamides. Recoveries in pneumonia and meningitis are comparable to those obtained in the United States.
- (7) The best delousing agent is GESSAROL quite similar to DDT, and used in the same manner.
- (8) Nothing new in the vitamin field. Vitamin K is the latest development and used primarily for the new-born.
- (9) Acute and sub-acute bacterial endocarditis seems to be on the increase and no effective drug is available.

- (10) Dr. Schoen exhibited a classical case of epidemic typhus in a 40 year old Luftwaffe officer.
- (11) A copy of "The Use of Sulfonamides", edited by Dr. Schoen was obtained and forwarded 'in the prescribed manner.

C. Interrogation of Professor Dr. W. Krantz, Director of the Polyclinic for Skin and Venereal Diseases. (POW) Status). 21 April 1945.

- (1) Dr. Krantz spoke no English and questioning through an interpreter was not satisfactory. He was passively resistant and either knew little or pretended to know little of recent advances in certain skin and anti-syphilitic therapy. For example his schedule of treatment for the early cases of syphilis consists of 5 tenths to 6 tenths Grams of Meosalvarson twice weekly for approximately six weeks. During the same period bismuth in oil is given intra-muscularly twice weekly in 1.5 cc doses. This first phase of treatment is followed by a six weeks rest period. Then the same treatment and rest period are repeated twice. He does not make routine spinal fluid examinations during or on completion of treatment, but waits until 3 to 4 years later.
- (2) He has no radium available for therapy and has had no experience in the use of penicillin. He depends entirely on surgery and roentgen rays in the treatment of skin cancer.

3. Equipment. Nothing unusual was found other than the below described.

A. Membrane Filter, manufactured by the Sartorius Werke, Gottingen.

- (1) This filter consists of a funnel-shaped, graduated glass container, at the bottom of which is a detachable metal filter holder. Suction applied to the filtrate exit facilitates and speeds up the process. The filter papers are round, thin, paper-like discs covered with a thin, homogeneous gelatin mixture. The frame work consists of cellulose esters or cellulose.

They are made according to the patents of Prof. Zsigmondy, Nobel Prize Winner. The filters are of varying porosity ($3/1000$ to $1/50,000$ of a m.m.) and are said to be suitable for ultra-filtration, electro ultra-filtration, dialysis, electro dialysis, osmosis and electro-osmosis. The Hygiene Institute has been satisfactorily using the filter for the removal of the B. colic group of organisms from water of questionable potability. The filter paper is then placed directly on a suitable culture media, and after incubation a macroscopic count of of the colonies is easily made. Dr. Schutz stated that the idea is new and was obtained from the Russians at Kiev a little over a year ago.

- (2) An improved membrane - Filter unit and a supply of filter papers were obtained from the manufacturer, Herr Sartorius. He stated that only he and a woman chemist knew the secret formula for the preparation of the filter papers. No further information was obtained. The filter unit and papers were packed and sent via the "T" Force Headquarters of the 12th Army Group to the Secretariat, CIOS Headquarters, Shaef, Rear.

B. High Speed Centrifuge - manufactured by the PhyWe A.G., Gottingen.

- (1) This apparatus is relatively small, is driven by a compressed air turbine, and has a metal ovoid rotor containing 6 or more centrifuge tube-holders. Solutions are centrifuged in a vacuum and a speed of 40,000 RPM is attained.
- (2) The Hygiene Institute is using the centrifuge in the early experimental phases of preparing a typhus vaccine from Proteus X-19 strains.
- (3) An attempt was made to obtain a centrifuge from the manufacturer, but none was available.

4. Optical and Instrument Works Inspected.

Inspection of the below listed optical and instrument works in Gottingen, 23 April, 1945.

A. PhyWe, A.G.

An attempt was made to obtain a 40,000 RPM centrifuge but none was available. This plant had been bombed and partially destroyed.

B. R. Winkel, GmbH, - Nothing unusual from a medical standpoint.

C. Joseph Schnider - Nothing unusual from a medical standpoint.

D. Sartorius Werke Aktiengesellschaft & Company - One of the latest models membrane filters and a supply of filter papers were obtained.

PART III

VETERINARY MEDICINE

1. Introduction.

The city of Gottingen offers little with respect to veterinary science in attainments, in fact, after inspection of the only installation pertaining to this branch of medicine, the Tierarztliches Institut, which is a department of the Institute of Agriculture, and after conversation with a Dr. Eric Fischer, the acting director (in the absence of Director Schermer, a Nazi now in custody): Dr. Franz Schutz, Director of the Institute of Hygiene of the University of Gottingen, and Professor Torreau, the Department of Soils and Plants, of the Agriculture Institute, it would appear that the widely advertised modern methods, meticulous public health regulations and practice of up to date preventive medicine attributed to this country generally, certainly does not obtain in this area.

2. Animal Diseases.

Records of the Institute of Hygiene augmented by conversa-

with Dr. Schutz, tersely show the prevalence of animal diseases and those with communicable animal diseases transmissible to men within their Vehrkrein XII, 1944 to be as follows:

| <u>Diseases</u> | <u>Number</u> |
|---|--|
| A. Rabies | none |
| B. Incephalitis | none |
| C. Encephalomyelitis | none |
| D. Anthrax | 2 cases |
| E. Botulism | none |
| F. Trypanosomiasis | none |
| G. Tuberculosis in humans (Bovine Type 5 - 10%) | 7397 cases 3010 deaths |
| H. Typhus | 890 cases 102 deaths |
| I. Undulant Fever (Brucellosis Bov.) | A few cases |
| J. Typhoid (water plus milk borne) | 1064 cases 92 deaths |
| K. Food poisoning (Salmonald) (Flexner plus sonne) | none a few |
| L. Tetanus | 4 cases |
| M. Foot and mouth disease | very little |
| N. Glanders | a few cases imported from Eastern front |
| O. Blackleg | a few cases |

In the opinion of Dr. Fischer of the Veterinary Department of the Institute of Agriculture, bovine tuberculosis, streptococcic mammitis and brucellosis (Bangs Disease) are the most important diseases. The statement that there are but a few cases of foot and mouth diseases prevalent in this area is questionable.

Cattel employed for special purposes as in the production of "preferred" milk, are tuberculin tested and the milk centrifuged and injected into guinea pigs. Other cattle are not subjected to test unless requested by the owner. Reacting cattle and those showing advanced clinical signs are slaughtered. Before the war if such animals were of the "preferred class" the owner was paid 80% of the appraised value. There is no remuneration at the present time.

The director denied that vaccination against Brucellosis was practised, until the writer remarked concerning vaccination technique used extensively in the United States, when he suddenly remembered that vaccination of unbred heifers with live, attenuated cultures of B. abortus was being employed.

It was stated that cattle are being immunized against foot and mouth disease by the use of a Waltramm's vaccine prepared on the Island of Reims - especially those animals in and about a focus of infection. Infected animals and premises are quarantined from 4 to 6 weeks and clinical cases are treated with "anti-serum". The doctor states that the serum is efficacious.

Glanders is diagnosed by clinical signs, complement-fixation test and cutaneous Mallein. Positive reactors are immediately slaughtered and the meat sterilized and prepared into meat meal for stock feed and fertilizer.

Trichinosis abounds among the swine. It was stated that the disease is especially wide spread in East Prussia where all foxes and wild hogs which are shot must be destroyed according to law.

3. The Slaughter House. The Municipal Slaughter House, which appeared adequate in size was found in a delapidated condition, unsanitary, and unfit for such purposes if gauged by American standards. It was inactive at the time of inspection though the carcasses of two recently slaughtered dairy cows were hanging on the rail prior to storage in the freezer. One live and poorly nourished animal, said to be lame, awaited slaughter. In Germany "emergency slaughter" is practised. By this rule, if an ailing animal can be slaughtered before it gasps its last breath, the carcass may be autopsied and if no visible signs of disease are prevalent, it may be passed for food.

The annual records of the slaughter house dating from April 1944 to March 1945, afford the following:

| | |
|---------------------|------|
| Cattle, large | 1429 |
| Cattle, small | 770 |
| Swine, large | 5349 |
| Swine, small | 844 |
| Swine, small shorts | 7 |
| Calves | 4308 |
| Sheep | 1502 |
| Goats | 21 |
| Horses, large | 178 |
| Horses, small | 70 |
| Colts | ? |

It was stated that all numbers are less than those of anti-bellum days. Equines are slaughtered in a separate section. Specimens from the diaphragms of all slaughtered swine are compressed and examined microscopically for thrichina cysts.

Carcasses are first retained in a pre-cooler at 2°C, after which they are stored in a cooler maintained at minus 4°C.

It was stated that rules of antimortem slaughter, post-mortem inspection and final disposition as laid down by Ostertag, are being observed.

4. Grades of Milk. The three grades of milk being employed in and about the city are:

- A. Consumer
- B. Drinking
- C. Preferred

Grades A and B do not require a bacterial count, but must contain a minimum of 2.5% butter fat and must be pasteurized at the "Central Dairy". A flash system of pasteurization i.e. heating milk to 85°C and holding at that temperature for 2 minutes is employed.

The consumer grade is mostly employed in the production of cheese and butter: the drinking grade as a beverage for the less discriminating: and the preferred grade, which must contain not less than 3.5% butter fat and is not subjected to heating but is from herds which are inspected once each

week by government agents, is produced for children. Inspection is clinical only.

Preferred milk is not permitted to have a bacterial count above 3,000 per c.c. Should it exceed that count it falls into grades A and B. Bacterial counts govern the grade of milk despite the physical condition of the animal.

Dr. Fischer stated that attendents of herds producing "preferred" milk are examined periodically for carrier state and communicable diseases.

According to Dr. Fischer the Gottingen district possesses livestock in the following approximate numbers:

| | |
|--------|--------|
| Horses | 6000 |
| Cattle | 8000 |
| Sheep | 2500 |
| Goats | 1500 |
| Swine | 10,000 |
| Calves | ? |

5. Agriculture.

Professor Torreau of the Plant and Soil Department, Institute of Agriculture stated that in order to successfully carry on agriculture pursuits, a great deal of calcium, phosphates, potassium and nitrogen are necessary. Especially is there a shortage of phosphates and the iron industry can furnish but about one-third of the amount required.

No machines are used at present, however in normal times, two-thirds of the farm work has been accomplished with animals, mostly horses and one-third by machinery. Small farms may use horses only.

Stock feeds are usually beets and oats in the winter and sometimes only betts. Hay, when available, is fed at the rate of 3 to 5 kilos each day. All residue from compressed rape seed, and brewery bi-products seeds such as malt and hops are also used. Owing to the shortage of stock feed, the animals are now receiving a maintenance ration which has caused a reduction in milk production. The

Central Dairy handles from 15000 to 20,000 liters a day.

Poultry have increased in number while cattle have been reduced by 10%; swine reduced 25 to 50%; sheep remain about the same as in normal times.

6. Apparatus Acquired: One membrane filter for use in water analysis was removed from the premises of the Sartorius-Werke Atiengesellschaft Company: two microscopes were procured at the R. Winkel Optical Works, and one magnifier (answerte-lupe) was gotten from the Schneider Company of the City of Gottingen. These will be employed in Army laboratory work.

7. Recommendations:

- A. That no meat, meat food or dairy products produced in this area be utilized by troops of the Allies.
- B. That if it is contemplated to maintain troops in this area for a lengthy period, all dairy cattle be tuberculin tested under the supervision of Army authorities.
- C. That if a Medical General Laboratory is activated in this area, the Institute of Hygiene be utilized for the purpose.

PART IV

CHEMICAL WARFARE

- 1. The target was non-productive in matters relating to Chemical Warfare.

PART V

INSTRUMENTS EVACUATED FROM TARGET

- 1. One optical instrument for testing and scoring vision color perception evacuated in the interest of Major Francois Chinard, Central Medical Establishment, 8th Air Force, Pinetree. Ref. Part I, para 3, D of report.
- 2. One membrane filter was evacuated in the interest of Commander Fitz Weddell (MC) USN, U.S. Naval Dispensary, London, Ref. Oart II, para 3, A.

PART VI

DOCUMENTS AND RECORDS

EVACUATED FROM THE TARGET AREA

The documents and records evacuated from the target area are listed below. The contents of some have been cited in parts of this report. Those considered to have high priority for translation and distribution are identified by an asterisk.

The addendum to this report consists of photostatic copies of certain documents considered to have priority. These documents are identified in the list by a check (✓). Copies of other documents will be forthcoming from time to time.

The Movie Films in the list are being reproduced for distribution.

- ✓ 1 * "DRUCKSTURZAPOPLEXIE"
- ✓ 1 * "DRUCKFLURZ VON 3 AUF 8 bis 15 km
Luftdruckhohe Wirkung auf den
Menschen"
- 1 * "Kreislauf und Atmung beim Detonationated"
- 1 * "Die Herstellung von Sauerstoff-
Stickstoffe Gemischen"
- ✓ 1 * "Sitzanlage mit Steuerungseinrichtung
für hohe Flugbeschleunigungen"
- 1 * "Untersuchung der Beschleunigungswirkungen"
- 1 * "Messung des Warmedurchganges von
Textilien, insbesondere bei Nässe
und Druck"
- ✓ 1 * "Untersuchungen über die Gesetzmässigkeiten
des Sehens und der Sichtweite"
- ✓ 1 * "Ertrag^glichkeitsgrenze für wechselnde
Raumtemperatur und Feuchte"
- ✓ 1 * "Ertrag^glichkeitsgrenze für wechselnde
Raumtemperatur und Feuchte bei Ruhe
und Arbeit"
- ✓ 1 * "Nachtsehen und Raumsehen"
- 1 * "Die Luftstossverletzung des Menschen unter
desonderer Berücksichtigung der
Schutzmöglichkeit"
- 1 * "Arztliche Luftschutzfragen"
- 1 * "Schutz des Menschen gegen Brandhitze"
- ✓ 1 * "Drucksturz auf Nennhöhen bis 17000 m.
Wirkung auf den Menschen"

MOVIE FILMS

- 1 roll * "Unterbrechung der Sauerstoffatmung in
verschiedenen Höhen"
- 1 roll "Fisch und Flugzeug"
- 1 roll "Der Krieslauf"

- 1 roll * "Elektrenkeuhalographie" Rolle No. 1.
- 1 roll * "Elektrenkeuhalographie" Rolle No. 2.
- 1 roll * "Beschleunigungsfilm"
- 1 roll * "Darstellung der Hohenwirkung" Rolle No. 1.
- 1 roll * "Darstellung der Hohenwirkung" Rolle No. 2.

- - - - -

- 1 reprint * "Physiologie des Hohenfluges"
(99 questions and answers)
- 8 vol * "Grundrifs der LUFTFAHRTMEDIZIN"
von. S. Ruff und H. Strughold
ZweiteAuflage 1944.
- 1 vol "Wissenschaftliche Abhandlungen aus
dem Physiologischen Institut der
Universitat Gottingen"
Band 4, Mai 1941
- 1 vol "Wissenschaftliche Abhandlungen aus
dem Physiologischen Institut der
Universitat Gottingen"
Band 5 Juni 1941 bis Dec. 1942
- 1 vol "Lehrbuch der Anatomie des Menschen"
von Benninghoff 1944

REPRINTS

- 1 "Uber Durchblutungsmossungen an Organen
in situ insbesondere mit der Therm
ostromuhr." von Butenendt, L.
Lendle etc. 1944.
- 1 "Uber Blutzucker und Zuckerbedarf in
Unterdruck" von F.W. Rittinghaus
1944.
- 1 "Die bestimmenden Faktoren fur die
Vasomotorik der Ruhedurchblutung des
Skelettmuskels" von Rein 1944
- 1 "Die Vasodilatation einer Extremitat bei
ortlicher Kalteeinwirkung von
Ashoff, 1944
- 1 "Zur physiologischen Bedeutung des
vasometorischen Hepaticareflexes"
Von Rein 1943

Reprints

- 1 "Der Einflusse der wichtigsten ,im
Tierexperiment verwendeten
Narkosmittel auf den respiratorischen
Stoffwechsel" von R.Schleinzer und
J.Antal 1941
- 1 "Versuche uber das sensible Trigeminusgebiet
als Ausgangsstelle von Kriislaufreflexen"
von H.Weber. 1944
- 1 "Uber Storungen der Warmerogulation im
akuten O₂ -Mangel bei Kaltebelastung"
von Otto Huhnhausen 1943
- 1 "Mohenanpassung am Jungfraujoeh" III
Mitteilung von Luft und Opitz, 1942
- 1 "Mohenanpassung am Jungfraujoeh" III
Mitteilung "Steigerung der Hohenfestigkeit
wahrend der Hohenanpassung und nach
Ruckkehr in die Ebene" von Luft und
Opitz 1942
- 1 "Uber die Abhangigkeit der reaktiven Hyperamio
von der Benervung." von Mercker und
G.Urbig , 1941
- 1 "Magnetische O₂-Analyse in Gasgemischen"
von Rein , 1943

LUFTFAHRT MEDIZIN

Vol I --1937 to Vol 7 --1943
6 Band 4(Schluss) Heft July 1942
7 Band 1 Heft
8 Band 1 Heft, 2/3 Heft, 4 (Schluss) Heft
9 Band 1/2 Heft
Proof of current edition

2 vol

1936/37
1938/40

VEROFFENTLICHUNGEN AUS DEM LUFTFAHRTMEDIZINISCHEN
FORSCHUNGSINSTI TUT DES REICHSLUFTFAHRT-
MINISTERIUMS, Berlin von Prof. H.Strughold
1936/1937 and 1938/1940

1 vol

"Physiologie Des Menschen" von Hermann
Rein Universitat Gottingen Siebente
Auflage Publishers : Springer-Verlag, 1943

2 vol

"Der Dienst des deutschen Wehrmachtapothekers"
von Paul Zabler, 1944

- 1 vol "Ergebnisse der Physiologie Biologiochemie
und Experimentellen Pharmakologie"
Herausgegeben von - A. Butenandt, LeLendle
Verlag von J.F. Bergmann 1944
- 1 vol Wissenschaftliche Abhandlungen aus den
Physiologischen Institut der Universitat
Gottengen unter Leitung von Hermann
Rein December 1943
- 4 Reprints "Physiologische Beziehungen Zwischen Der Lober
Und Dem Energiestoffwechsel Des Herzens"
von Hermann Rein December 1943
- 1 vol "Gesammelte qualitativ-haematologische
Untersuchungen 1936-1944 von Dr.med
Joseph Arneth
- 1 vol "Blutkonservierung und Transfusion von
konserviertem Blut" von Dr.O. Schurch,
Willenegger, Knoll 1942
- 1 vol "Physiologie Des Menschen" von Hermann
Rein 1943
- 3 copies Arbeiten aus dem Physiologischen Institut
Gottingen Jan. 1943-March 1945
- 1 vol "Deutscher Flugzeugbau" Handbuch der
Luftfahrttechnik Ausgabe 1939.
- 1 vol "Luftbild-Topographie" Hansa Luftbild
G.M.B.H. Berlin 1946
- 1 vol "Luftbild und Luftbildmessung" Hansa Luftbild
G.M.B.H.
- 1 vol "Das Gesetz Der Geschlossenen Blutkreise"
von Dr.Arnold Poschl 1943
- 1 vol "Der Pressluftschaden" von Dr.Alois Learmann
1944
- 1 Reprint "Vasomotorische Schutzreflexe aus dem Stregebiet
der Arteria hepatica" von Hermann
Rein 1943
- 1 Reprint "Die Physiologie als Ausgang.und Auswir-
kungsgebiet des J.R. Meyerschen
Energiegesetzes" von Hermann Rein 1942

REPRINTS

- 1 "Physiologische Beziehungen Zwischen Der
Leber Und Dem Energiestoffwechsel
Des Herzens. Prof.H.Rein 1943
- 1 "Physiologische Grundlagen Zum Verstandnis
von Wärme und Kälteschaden am
menschlichen Organismus" von Rein. 1943
- 1 "Zur Erholung aus Sauerstoffmangel insbesondere
über den Paradoxeffekt der Sauerstoffgabe"
von Noell und Roeder. 1943
- 1 "Über die abhängigkeit der Energieumsetzung
im Herzen von der Leber im besonderen
Hinblick auf das Arbeiten im Sauerstoff-
mangel." von Hermann Rein , 1942
- 1 "Über Durchblutungsmessungen an Organen in
situ insbesondere mit der Thermostromuhr"
von Rein 1944
- 1 "Zur Frage der Herzinsuffizienz im
Sauerstoffmangel" von H.Mercker 1942
- 1 "Über Sauerstoffverbrauch und Wärmehaushalt
im Sauerstoffmangel" von K.Jouck, 1943
- 1 "Die Anpassung von Durchblutung und Energieum-
satz des rhythmischarbeitenden
Skelettmuskels bei Belastungsänderungen"
von Grosse-Brockhoff, H.Rein und W.
Schoedel 1943
- 1 "Das Zusammenwirken von Acetylcholin
Mangelstoffwechselprodukten und
vegetativer Innervation als Grundlage
der natürlichen Vasomotorik des
Skelettmuskels" von H.Rein 1944
- 1 "Über die Kälte-dilatation der Extremität
des Menschen in Eiswasser" von
Jurgen Aschoff. 1944
- 1 "Über die Interferenz temperaturregulatorischer
und Kreislauf regulatorischer Vorgänge
in den Extremitäten des Menschen"
von J.Ashoff. 1944
- 1 "Über atmungserrebarkeit in der Schwangers-
chaft" von H-H-1 Loeschke und H.
Semmer . 1944

REPRINTS

- 1 "Kreislaufregulatorische Wirkungen der Kalt-
edilatation einer Extremität als Folge
extremer, unschriebener Abkühlung"
von J.Ashoff 1944
- 1 "Magnetische Oxygen-Analyse in Gasgemischen"
von H.Rein. 1943
- 1 "Über Durchblutungsmessungen an Organen in
situ insbesondere mit der "hermost-
romuhr" von Eutenandt , 1944

MONOGRAPHS

- 1 "Bericht über die Tagung der Luftwaffenpa-
thologen in Freiburg"
1--- Die Pathologie der Höhenkrankheit
2--- Die Absturz und Schussverletzungen
beim Flieger
3--- Wehrmedizinisch wichtige Fragen
der Kreislaufpathologie
- 1 "Hohenunfälle Hohenzwischenfälle durch
Sauerstoffmangel"
- 2 "Bericht über eine Besprechung am 24 und
25 July 1942 im Institut für Luftfahrt-
medizin Hamburg" über "Hohenfestigkeit
und Hohenanpassung"
- ✓ 1 "Physiologisch-optisch wichtige Fragen für
die Flugtätigkeit bei Nacht" von
Ingeborg Schmidt 1942
- ✓ 1 "Tierversuche zum Fallschirmabsprung aus
Überdruckkabinen" von Wendt und Lutz
- ✓ 1 "Die Wiederbelebung aus dem anoxischen
Scheintod" von Dr.W.Lutz 1942
- 1 "Die Ertraglichkeitsgrenzen bei Fliehdraft-
belastung für den sitzenden
Flugzeugführer" von Prof.Diringshofen-
1943
- ✓ 1 "Gesichtsfeldmessungen mit farbigen Prüfb-
jekten im Dämmersehen" von Ingeborg
Schmidt und Lotte Kitzinger 1942.
- ✓ 1 "Übermudungszustände bei Fliegern" von Dr.
George von Knorre 1943

Monographs

- ✓ 1 "Versuche mit einem Stratosphären Überdruckhelm" von Clamann und Luft. 1943
 - 1 "Hilfsgerät zur Steuerung zeitlich definierter Druckschwankungen in Unterdruckkammern" von Dr.Lutz 1943
 - 1 "Eine Unterdruckkammer zum Studium mikroskopisch kleiner objekte" von Dr. H.G.Clamann und Dr.W.H.Denzer.
 - 1 "Einaugige als Flugzeugführer" von. Prof. Kyrieleis, 1942
 - ✓ 1 "Flugmedizinische Grundlagen zum Bau von Scheuersitzen" from Deutsche Versuchsanstalt für Luftfahrt, E.V. , Berlin-Adlershof, Institut für Flugmedizin. 1943
- DEUTSCHE LUFTFAHRTFORSCHUNG
- 1 Über die Einwirkung der Kalte auf das Zahnsystem, 1941
 - 1 Entwurf einer Klimaanlage für eine Unterdruck-Kalteschammer der flugmedizinischen Abteilung der DVL. 1941
 - 1 Zusammenhänge zwischen Menstruation und Unfällen in der Frauensegelflugschulung 1942
 - 1 Über Zielfertigkeit und Treffwahrscheinlichkeit beim Schiessen von links der Flugrichtung (Schiessen auf bewegte Ziele) 1941
 - 1 Untersuchung über den Einfluss der Sauerstoffatmung auf die alveolare CO₂ Spannung im Unterdruck. 1941
 - ✓ 1 Ein Elektrisches Gerät zur Bestimmung der oberen Hergrenze. 1940
 - ✓ 1 Der Fallschirmabsprung aus grossen Höhen, 1941
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- ✓ 1 Über Flugversuche zur Frage der Ertraglich-
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- ✓ 1 Untersuchungen über des Verhalten einiger Kreislaufgassen bei hehen Beschleunigungen in Flugversuch und über den Einfluss CO2 Zusatz sur Atenluft auf die Beschleunigungsertraglichkeit. 1939.
- ✓ 1 Über die Entstehungsursache schwerer innerer Verletzungen bei insassen von Gleitflugzeugen infolge heher Verzegerungen bei Bruchlandungen und über Massnahmen zur Vermeidung dieser Verletzungen. 1938.
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- 1 Reprint Ztschr .Hyg. 121: 559-568, 122:
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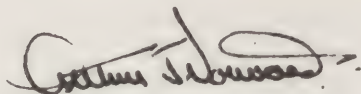
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- 1 Description of Ultra-Flitering Apparatus.
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ARTHUR J VORWALD
Commander (MC) USNR

Team Leader

ADDENDUM

FIELD TEAM REPORT

CIOS TARGET 27/17e

Gottingen University, Gottingen,
Germany.

The addendum herewith contains a list of documents acquired by the CIOS Team from the CIOS Target 27/17e, University of Gottingen, Gottingen, Germany.

The documents relate to Aviation Medicine. They were considered of special importance and were therefore reproduced with priority over others also acquired at the University. Documents are on file at the Air Documents Research Center, 59 Weymouth Street, London.

The documents are numbered and arranged consecutively according to the following list:

Vol. I.

1. Drucksturz auf Nennhöhen bis 17000 m Wirkung auf den Menschen.
2. Wirkung von Belladonna-Alkaloiden auf die Leistungsfähigkeit im Sauerstoffmangel.
3. Drucksturz-Versuche am Menschen.
 1. Zwischenbericht: Drucksturz-Selbstversuche ohne Sauerstoff Clamann.
4. Übermüddungszustände bei Fliegern.
5. Physiologisch-optisch wichtige Fragen für die Flugtätigkeit bei Nacht.
6. Die Wiederbelebung aus dem anoxischen Scheintod.
7. Erträglichkeitsgrenze für wechselnde Raumtemperatur und-Feuchte.
8. Drucksturzapoplexie.
9. Der Fallschirmabsprung aus grossen Höhen.

10. Über die Entstehungsursache schwerer innerer Verletzungen bei Insassen von Gleitflugzeugen infolge hoher Verzögerungen bei Bruchlandungen und über Massnahmen zur Vermeidung dieser Verletzungen. S. Ruff.
11. Nachtsehen und Raumsehen. .
12. Untersuchungen über die Gesetzmässigkeiten des Sehens und der Sichtweite. Schönwald.
13. Wärmehaushalt und Kälteschutz im Flugzeug. von K. Büttner, Rechlin. Seite 3.

Das Kälteklima heutiger Flugzeug. von Th. Benziger, H. Döring und W. Hornberger, Rechlin. Seite 10.

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Ein Überblick über die Einwirkung des Höhenklimas, insbesondere der Kälte, auf das Kauorgan. von W. Freitag, Berlin-Adlershof. Seite 17.

Teilnehmerverzeichnis. Seite 21.
14. Über die Wirkung von Schwingungen auf das vegetative Nervensystem und die Sehnenreflexe. W.E. Loeckle.
15. Untersuchungen über das Verhalten einiger Kreislaufgrössen bei hohen Beschleunigungen im Flugversuch und über den Einfluss von CO₂-Zusatz zur Atemluft auf die Beschleunigungserträglichkeit. M. Matthes.
16. Sitzanlage mit Steuerungseinrichtung für hohe Flugbeschleunigungen. Stöckel.

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The documents are numbered and arranged consecutively according to the following list:

Vol. II.

17. Über Flugversuche zur Frage der Erträglichkeit hoher Erträglichkeit hoher Beschleunigungen bei liegender Unterbringung der Flugzeuginsassen. Wieshöfer.
18. Bericht über die Sitzung "Optisch-physiologische Fragen beim Nachtfliegen am 10. Dezember 1941 in Berlin.
19. Erträglichkeitsgrenze für Wechselnde Raumtemperatur und -Feuchte bei Ruhe und Arbeit.
20. Der Fallschirmabsprung aus grossen Höhen.
21. Symptomatologie des Kreislaufes bei Verminderung des Luftdruckes im Hinblick auf die Höhentauglichkeitsprüfung.
22. Über Beschleunigungsuntersuchungen am Menschen. S. Ruff.
23. Gesichtsfeldmessungen mit farbigen Prüfobjekten im Dammersehen. Zur Frage der roten Leuchtziffern am Flugzeug-instrumentenbrettern.

24. Tierversuche zum Fallschirmabsprung aus Überdruckkabinen.
25. Über den Sauerstossvorrat des Menschen nach Unterbrechung der Sauerstossatmung in grossen Höhen. E. Opitz.
26. Schutz des Menschen gegen Brandhitze.
27. Versuche mit einem Stratosphären-Überdruckhelm.
28. Druckflurz von 3 auf 8 bis km Luftdruckhöhe Wirkung auf den Menschen.
29. Tierversuche Über Auskühlung und Erwärmung in Wasser.
30. Das anatomische Bild der Blutverteilung bei Beschleunigungswirkung. Romberg.
31. Flugmedizinische Grundlagen zum Bau von Schleudersitzen.
32. Ein elektrische Gerät zur Bestimmung der oberen Hergrenze. Goermann.
33. Ausschuss Segelflug.

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